

**REMARKS**

Upon entry of the present amendment, claims 1-6, 8-24 and 27 will remain pending in the above-identified application. Claims 5, 6, 8, 9, 16 and 17 have been withdrawn from consideration. Claims 3, 12 and 18 have been amended to further clarify the present invention. The present amendments to the claims do not introduce new matter into the application as originally filed.

Accordingly, proper consideration of each of the pending claims is respectfully requested at present, as is entry of the present amendment.

***Claim Objection***

At page 2 of the Office Action, the Examiner has objected to claims 3 and 4 based upon informalities therein. Applicants respectfully traverse this objection.

Claim 3 has been amended so that it depends from only claim 2 in order to overcome these objections to claims 3 and 4.

Thus, Applicants respectfully requests that the Examiner withdraw this objection.

***35 USC § 112, 2nd Paragraph Rejection***

In the outstanding Office Action, the Examiner has rejected claims 12 and 18 under 35 U.S.C. § 112, second paragraph, as being indefinite.

Applicants respectfully traverse this rejection and request withdrawal thereof.

*Claim 12*

Claim 12 has been amended in order to further clarify that the component (g) is an optional element.

*Claim 18*

Claim 18 has been amended so that it depends from claim 15, instead of claim 16, which is withdrawn from consideration. Further, the term “aluminum hydroxide” has been deleted since claim 15 contains the same.

As explained above, upon entry of the instant amendments to the claims, this rejection has been overcome. Thus Applicants respectfully requests that the Examiner withdraw this rejection.

***Claim Rejections - 35 U.S.C. § 103(a)***

At pages 3-7 of the Office Action, claims 1-3, 10-15, 18-21, and 27 have been rejected under 35 USC § 103(a) over **Mendenhall US ‘102** (US 6,143,102) in view of **Labino US ‘694** (US 2,946,694) and **Matsuda US ‘767** (US 5,780,767).

Further, claims 4 and 22-24 have been rejected under 35 USC § 103(a) over **Mendenhall US ‘102** in view of **Labino US ‘694**, **Matsuda US ‘767** and **Kishi US ‘275** (US 4,021,275).

Applicants respectfully traverse each of the above rejections. Reconsideration and withdrawal of each of these rejections is respectfully requested based on the following considerations.

*Distinctions over Mendenhall US '102*

As recited in independent claims 1, 2, 12, 15 and 27, a gas generating composition of the present invention contains 1) phosphate glass of a specific amount (i.e., “0.5 to 5% by mass of phosphate glass”) and 2) a specific binder (“*carboxymethyl cellulose, sodium carboxymethylcellulose, potassium carboxymethylcellulose, carboxymethylcellulose ammonium, cellulose acetate, cellulose acetate butyrate, methyl cellulose, ethyl cellulose, hydroxyethyl cellulose, ethylhydroxyethyl cellulose, hydroxypropyl cellulose, carboxymethylethyl cellulose, fine crystalline cellulose, polyacrylamide, an aminated product of polyacrylamide, polyacryl hydrazide, a copolymer of an acrylamide and a metal acrylate, a copolymer of polyacrylamide and a polyacrylic ester, polyvinyl alcohol, acrylic rubber, guar gum, starch, and silicone*”).

On the other hand, Mendenhall US '102 merely disclose a gas generating composition comprising by mass 0.5 to 5 % glass (silica); and by mass 1 to 15 % aluminum hydroxide.

However, Mendenhall US '102 fails to disclose or suggest 1) the phosphate glass of the specific amount and 2) the specific binder.

Thus, Mendenhall US '102 does not give one skilled in the art any motivation to arrive at the present invention.

*Distinctions over Labino US '694*

The Examiner asserts that Labino US '694 discloses phosphate glass, for example, at page 4, lines 1-2 of the Office Action.

However, Labino US '694 merely discloses silica-free glass composition containing  $P_2O_5$  at column 1, lines 26-46, but fails to disclose or suggest that the phosphate glass of the specific amount is employed in a gas generating composition.

Further, at page 4, lines 4-5 of the Office Action, it is stated that Labino US '694 discloses that silica has resistance to acids. However, it is not required for a gas generating agent to have resistance to acids. Thus, such a disclosure of Labino US '694 does not motivate one skilled in the art to reach the present invention.

Accordingly, Labino US '694 does not give one skilled in the art any motivation to arrive at a gas generating composition of the present invention.

*Distinctions over Matsuda US '767*

Matsuda US '767 also fails to disclose or suggest the phosphate glass of the specific amount.

Thus, Matsuda US '767 does not give one skilled in the art any motivation to arrive at a gas generating composition of the present invention.

*Distinctions over Kishi US '275*

Kishi US '275 also fails to disclose or suggest the phosphate glass of the specific amount.

Further, Kishi US '275 fails to disclose or suggest the specific binder of the present invention. Accordingly, Kishi US '275 does not give one skilled in the art any motivation to arrive at a gas generating composition of the present invention.

Combination of the Cited References

Applicants respectfully submit that the Examiner has not established a *prima facie* case of obviousness.

In the present case, the Examiner has rejected the present invention over the primary reference Mendenhall US '102 in view of the secondary reference Labino US '694 and the other references (e.g., Matsuda US '767 and Kishi US '275). Each of the outstanding rejections is based upon the combination of Mendenhall US '102 in view of Labino US '694.

Labino US '694 discloses a glass composition, but fails to disclose or suggest that a phosphate glass is employed for a gas generating composition. Applicants respectfully submit that Labino US '694 is being used improperly to cure the deficiencies of Mendenhall US '102 for two reasons: 1) there is no motivation to combine Labino US '694 with Mendenhall US '102, and 2) Labino US '694 teaches away from the Mendenhall US '102 disclosure.

***1) Labino US '694 fails to provide motivation to combine with Mendenhall US '102***

Labino US '694 does not provide any motivation to one skilled in the art to arrive at the present invention.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

The Examiner states in the Office Action, in several instances, that:

“it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the composition of Mendenhall et al. by using phosphate glass as disclosed by Labino so as use a silica that resists acids (Labino at col. 2, lines 39-43)”

However, the rationale provided by the Examiner as to why a person of ordinary skill in the art would modify Mendenhall US ‘102 with Labino US ‘694 is flawed. Neither Mendenhall US ‘102 nor claims 1, 2, 12, 15, or 27 recites the presence of an acid. While it is true that a rationale different from Applicants’ is permissible, the Examiner must articulate some rational underpinning to support the legal conclusion of obviousness. *In re Kahn*, 78 USPQ2d 1329, 1336 (Fed. Cir. 2006).

Mere identification in the prior art of each element is insufficient to defeat the patentability of the combined subject matter as a whole. Rather, to establish a *prima facie* case of obviousness based on a combination of elements disclosed in the prior art, the Examiner must articulate the basis on which he concludes that it would have been obvious to make the claimed invention. *Id.* at 1335. “It is necessary to consider ‘the reality of the circumstances,’ –in other words, common sense—in deciding in which fields a person of ordinary skill would reasonably be expected to look for a solution to the problem facing the inventor.” *In re Wood*, 202 USPQ 171 (C.C.P.A. 1979).

Here, the Examiner contends that the phosphate glass of Labino US ‘694 offers the “advantage” of resisting acids. However, if Mendenhall US ‘102 is the primary reference and the field of endeavor is directed to a gas generating composition, why would a person of ordinary skill look to Labino US ‘694 to modify the Mendenhall US ‘102 disclosure? Although Mendenhall US ‘102 does contain glass, it does not contain any acid. The Examiner has not

explained why a person of ordinary skill in the art of gas generating compositions would be concerned with acid resistance and would be motivated to substitute the glass disclosed in Mendenhall US '102 with the acid resistant glass in Labino US '694. In accordance with *KSR Int'l Co. v. Teleflex, Inc.*, 127 S. Ct. 1727 (2007), in formulating a rejection under 35 USC 103(a) based upon a combination of prior art elements, it remains necessary to identify the reason why a person of ordinary skill in the art would have combined the prior art elements in the manner claimed.

Since the Examiner has not identified why a person of ordinary skill in the art would have combined Mendenhall US '102 and Labino US '694 in the manner suggested, a *prima facie* case of obviousness has not been established.

**2) Labino US '694 teaches away from the Mendenhall US '102 disclosure**

As the Examiner asserts, Mendenhall US '102 disclose a gas generating containing silica glass at column. 5, line 21. On the other hand, Labino US '694 disclose at column 1, lines 26-27:

"A further object of the invention is to provide silica-free glass which exhibits in the molten state characteristics which render it useful in the formation of fine fibers.

Simply put, the object of Labino US '694 teaches away from the disclosure of Mendenhall US '102.

Labino US '694 teaches away from Mendenhall US '102 because Labino US '694 uses a silica-free glass in order to form fine fibers. In the Office Action, the Examiner notes that Mendenhall US '102 teaches that it is desirable to form a wafer or tablet. The use of the silica-

free glass, fine fibers of Labino US '694 appear wholly inconsistent with the Mendenhall disclosure.

A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984) (Emphasis in original). If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959).

In the present case, the Examiner's proposed modification is improper because the combination would change the principle of operation of both Mendenhall US '102 and Labino US '694. Thus, there is not a reasonable expectation of success to arrive at the present invention by combining Labino US '694 and Mendenhall US '102.

Accordingly, for the reasons set forth above, Applicants respectfully submit that the outstanding rejections fail to establish a *prima facie* case of obviousness. Reconsideration and withdrawal of the rejections is respectfully requested.

#### Unexpected Results

Claims 1-4, 7, 10-15, and 18-27 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Poole et al. (USP 5,386,775) in view of Kishi et al. (USP 4,021,275) in further view of Hinshaw et al. (USP 5,241,281). This rejection is respectfully traversed.



Evidence of unobvious or unexpected advantageous properties, such as superiority in a property the claimed compound shares with the prior art, can rebut *prima facie* obviousness. *In re Chupp*, 816 F.2d 643, 646, 2 USPQ2d 1437, 1439 (Fed. Cir. 1987).

According to the present invention, the combustion temperature and the composition of the generated gasses are dramatically and unexpectedly improved. As stated at the Declaration under 37 C.F.R. § 1.132 of Dr. Jianzhou of December 22, 2006, according to the present invention, the calculated combustion temperature of the gas generating composition of the present invention was 1390°C, while the calculated temperature of the gas generating composition of prior art was higher (for example, the calculated temperature of the Poole's reference (US 5,386,775) was 1821°C). Further, in the experiment, the generated gasses of the present invention contained 19ppm of NOx and 180ppm of CO, while the generated gasses of prior art contained NOx and CO in higher content (for example, content of the generated gas of the Poole reference were 1963ppm of NOx and 528 ppm of CO, respectively.).

Thus, it is also proved that the present invention has such unexpected and advantageous results over prior art by the 132 Declaration.

Further, regarding the 132 Declaration, at page 2, lines 8-10 of the Office Action, the Examiner states, as follows:

*A second, the data presented compares the instant invention's comparison with the composition of Pool et al. However, the rejection is based on the composition of Poole et al. as modified by Kishi et al. and Hinshaw et al. and not Pool et al. alone.*

However, an affidavit or declaration under 37 CFR 1.132 must only compare the claimed subject matter with the closest prior art to be effective to rebut a *prima facie* case of obviousness.

*In re Burckel*, 592 F.2d 1175, 201 USPQ 67 (CCPA 1979). Although evidence of unexpected results must compare the claimed invention with the closest prior art, Applicant is not required to compare the claimed invention with subject matter that does not exist in the prior art. *In re Geiger*, 815 F.2d 686, 689, 2 USPQ2d 1276, 1279 (Fed. Cir. 1987).

Namely, it is not required for Applicants to show data comparing the present invention with such a combination of prior art, since the combination itself does not exist in the prior art.

Thus, Applicants respectfully request that the Examiner reconsider the unexpected results of the present invention based the 132 Declaration.

As explained above, since the cited references do not provide any motivation to arrive at the present invention, and further the present invention has unexpected results, the present invention (independent claims 1, 2, 12, 15 and 27 and dependent claims therefrom) is not obvious over the cited references. Accordingly, Applicants respectfully requests that the Examiner withdraw each of these rejections.

Conclusion

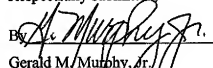
Based upon the amendments and remarks presented herein, the Examiner is respectfully requested to issue a Notice of Allowance clearly indicating that each of the pending claims are allowed under the provisions of Title 35 of the United States Code.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Monique T. Cole (Reg. No. 60,154) at the telephone number below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§1.16 or 1.14; particularly, extension of time fees.

Dated: October 15, 2007

Respectfully submitted,

By  MTC

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